Independent Suspension(IS)

troubleshooting and service manual

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Introduction

The independent suspension system permits individual wheels to move up and down without affecting the other wheels. This allows wheels to be on different surfaces while maintaining traction.

For information on the assembly or individual components of this product, please visit:
https://support.lci1.com/axles-and-suspension/

Safety

Read and understand all instructions before installing or operating this product. Adhere to all safety labels.

This document provides general instructions. Many variables can change the circumstances of any procedure, i.e. the degree of difficulty involved in the service operation and the ability level of the individual performing the operation. This document cannot begin to plot out procedures for every possibility, but will provide the general instructions for effectively installing, removing or servicing the system. In the event the skill level required is too advanced or the procedure too difficult, a certified technician should be consulted before performing the necessary operation. Failure to correctly install, remove or service the system may result in voiding the warranty, inflicting injury or even death.

⚠WARNING

The "WARNING" symbol above is a sign that a procedure has a safety risk involved and may cause death or serious personal injury if not performed safely and within the parameters set forth in this manual.

⚠WARNING

Lift the trailer by the chassis. Do not go under the trailer unless it is properly supported. Unsupported trailers can fall and may result in death, serious injury or property damage.

⚠WARNING

Trailer MUST be supported per manufacturer's recommendations before working underneath. Failure to do so may result in death or serious personal injury.

⚠WARNING

Failure to follow instructions provided in this manual may result in death, serious personal injury and/or severe product and property damage, including voiding of the component warranty.

⚠CAUTION

The "CAUTION" symbol is a sign that a procedure has a risk involved that may cause personal injury or property damage if not performed safely and within the parameters set forth in this manual.

⚠CAUTION

Moving parts can pinch, crush or cut. Keep clear and use caution.

Resources Required

- Cordless or electric drill or screw gun
- Torque wrench
- Floor jacks
- Jack stands

Trailer Axle Owner's Manual

Many maintenance procedures for trailer axles are listed in the Trailer Axle Owner's Manual. These include procedures for inspections, maintenance and replacement of hubs, drums and bearings, maintenance of brakes, troubleshooting and a maintenance schedule.

Visit https://lci-support-doc.s3.amazonaws.com/manuals/axles-and-suspension/ccd-0001412.pdf to access this information. The document is contained on the Lippert Support Documentation website which houses information on Lippert parts and maintenance and installation procedures. See components document for part numbers.

Wheel Alignment Procedure

NOTE: There are nine different positions on both camber and toe adjusters, including four positive and four negative positions and a neutral position. Adjustments for camber and toe are different on curbside and roadside of the trailer (Fig. 4).

NOTE: Camber is the inward or outward tilt of the tires as viewed from the front: Inward tilt is negative, outward tilt is positive (Fig. 5). Camber is used to distribute load across the entire tread. Toe is the side-to-side difference in distance between the front and rear of the tire (Fig. 6).

NOTE: Each slot is an increment of 1/16" bolt displacement. Maximum travel is 1/4" in each direction.

Measure Camber, Toe

1. Load the trailer and park it on a flat surface.
2. To measure camber, place a digital level vertically across the wheel rim or drum face.
3. For the toe measurement, place a straight edge horizontally across the wheel, edge of rim or drum face and then measure the distance from the straight edge to the chassis rail in the front and rear of the tire.

Adjust Camber, Toe

1. Lift the vehicle so the weight is off the suspension.
2. Place jack stands under the vehicle.

⚠WARNING

Trailer MUST be supported per manufacturer's recommendations before working underneath. Failure to do so may result in death or serious personal injury.

⚠WARNING

Always lift trailer by the frame, never the axle or suspension. Do not go under the trailer unless it is properly supported by jack stands. Unsupported trailers can fall causing death or serious injury. This repair should only be completed by an authorized service technician.

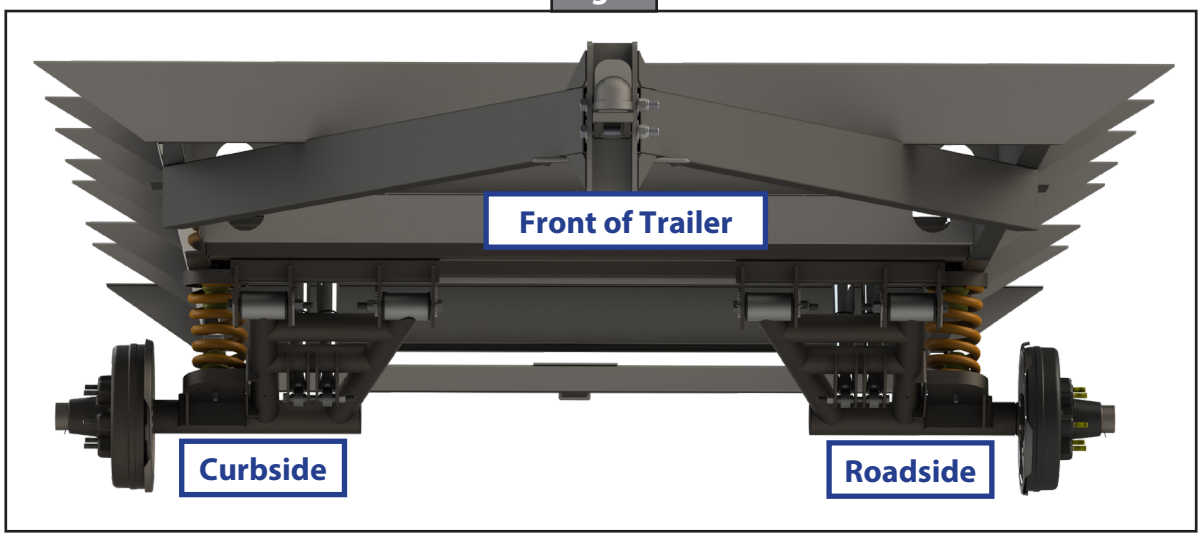
NOTE: Make sure to move adjusters an equal amount on both sides of the arm.

3. Loosen the nut on the camber adjuster, which is located next to the wheel (Fig. 5).
4. Adjust camber.
   - **A. Negative:** On the curbside adjusters, clockwise rotation of the outer adjuster (Fig. 9) and counterclockwise rotation of the inner adjuster (Fig. 10) from the neutral positions will add negative camber so the top of the wheel is slightly leaning in toward the trailer. On the roadside adjusters, counterclockwise rotation of the outer adjuster (Fig. 11) and clockwise rotation of the inner adjuster (Fig. 12) will add negative camber.
   - **B. Positive:** On the curbside adjusters, counterclockwise rotation of the outer adjuster (Fig. 9) and clockwise rotation of the inner adjuster (Fig. 10) from the neutral positions will add positive camber so the top of the wheel is slightly leaning away from the trailer. On the roadside adjusters, clockwise rotation of the outer adjuster (Fig. 11) and counterclockwise rotation of the inner adjuster (Fig. 12) will add positive camber.
5. Loosen the nut on the toe adjuster, which is inside the adjuster assembly (Fig. 5).
6. Adjust toe.
   - **A. Toe out:** On the curbside adjusters, clockwise rotation of the outer adjuster (Fig. 13) and counterclockwise rotation of the inner adjuster (Fig. 14) from the neutral positions will create toe out so the front of the tire will be slightly farther from the chassis rail than the back of the tire. On the roadside adjusters, counterclockwise rotation of the outer adjuster (Fig. 15) and clockwise of the inner adjuster (Fig. 16) will add toe out.
   - **B. Toe in:** On the curbside adjusters, counterclockwise rotation of the outer adjuster (Fig. 13) and clockwise rotation of the inner adjuster (Fig. 14) from the neutral position will add toe in so the

front of the tire will be slightly farther from chassis rail than the back of the tire. On the roadside adjusters, clockwise rotation of the outer adjuster(Fig. 15) and counterclockwise rotation of the inner adjuster (Fig. 16) will add toe in.

7. After adjustment, torque adjuster nuts to 300 ft-lbs.
8. Lower the vehicle to load the suspension.
9. Measure the alignment to determine if the adjustment is satisfactory.
10. If necessary, repeat procedure and readjust wheels.

Fig. 3



Adjusting Camber/Toe Curbside View

Fig. 4

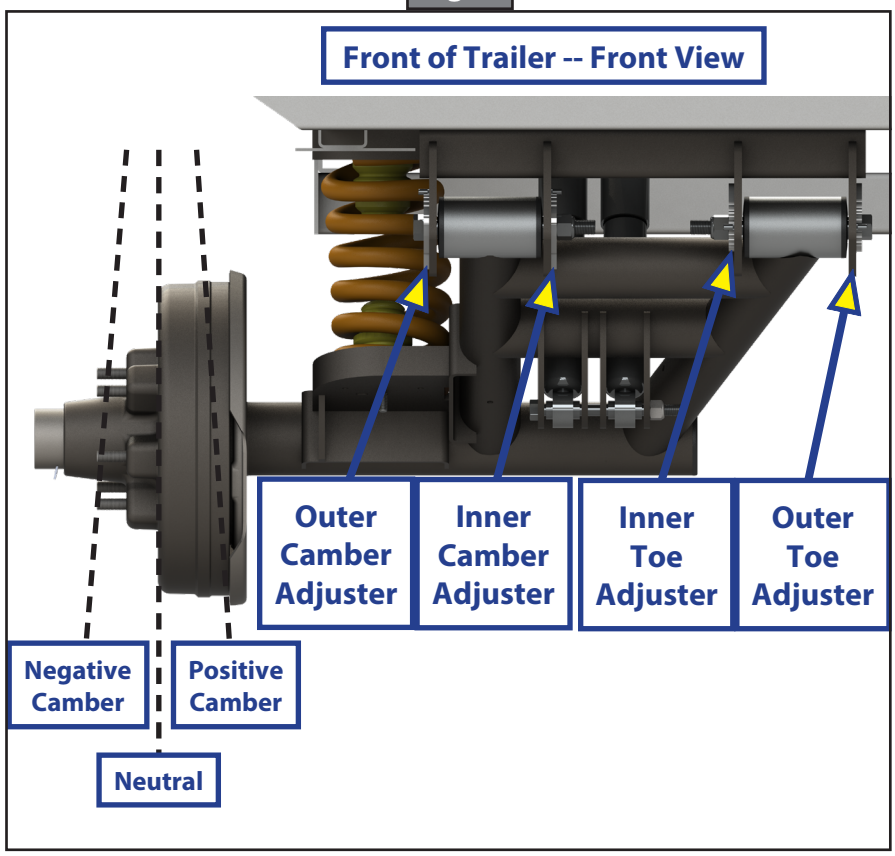
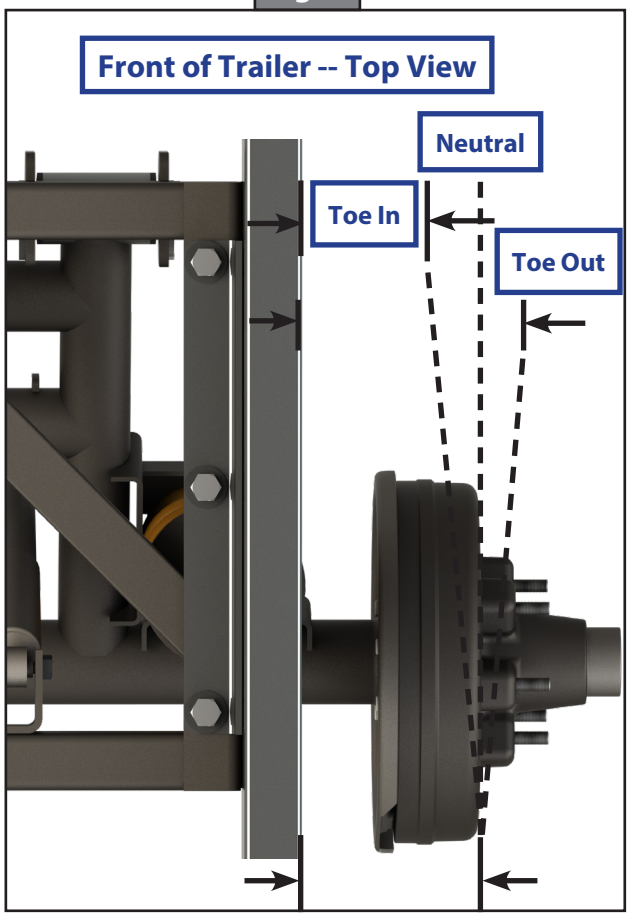


Fig. 5



Adjusting Camber
Higher bolt position = Negative camber
Lower bolt position = Positive camber

Curbside View

Fig. 6

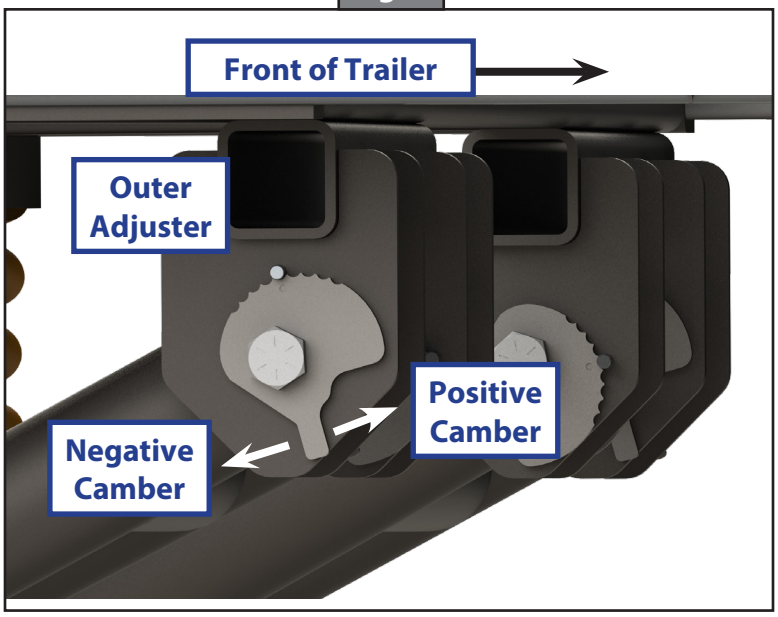
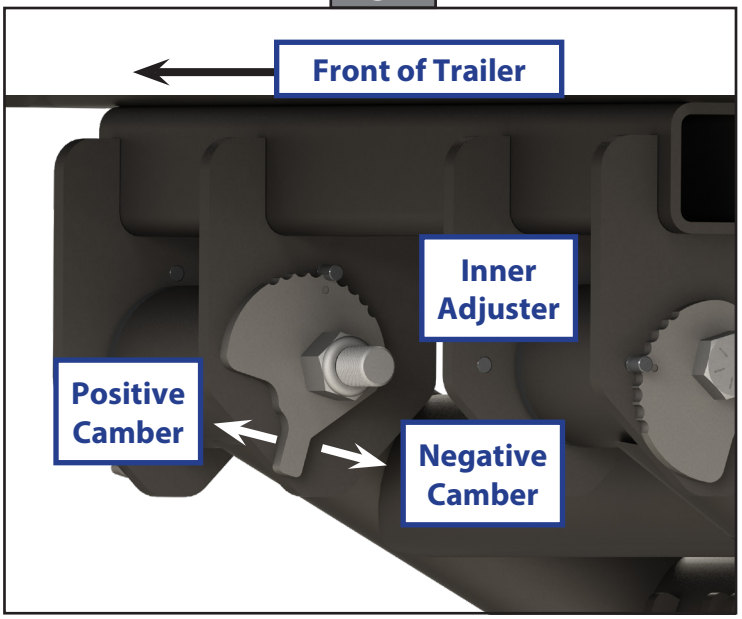


Fig. 7



Roadside View

Fig. 8

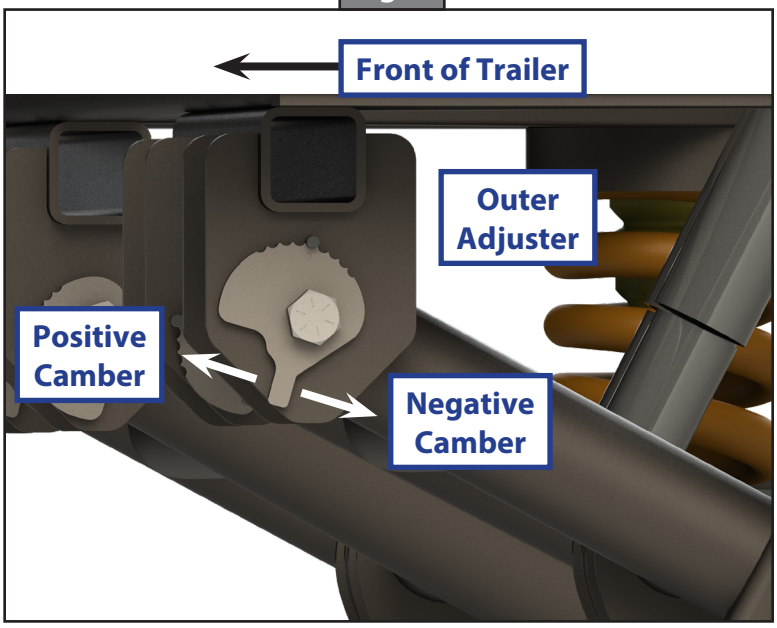
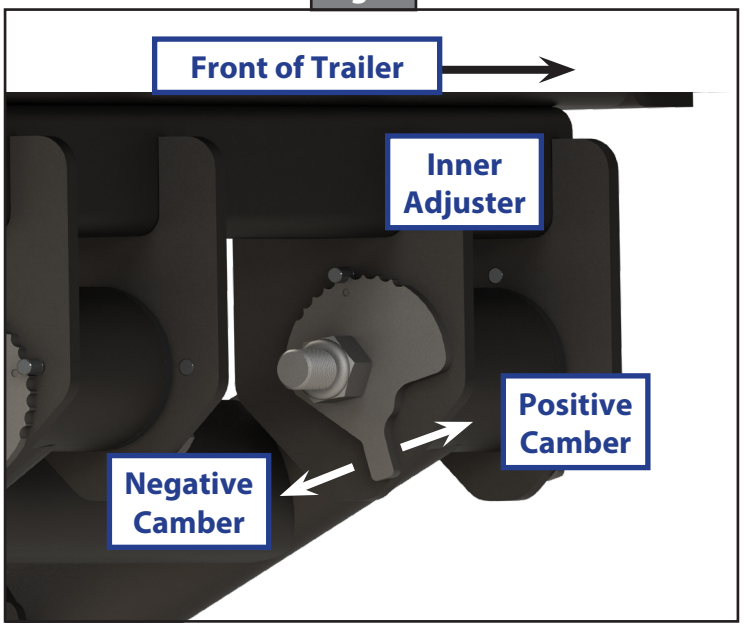


Fig. 9



Adjusting Toe
Bolt position toward front = Toe in
Bolt position toward rear = Toe out

Curbside View

Fig. 10

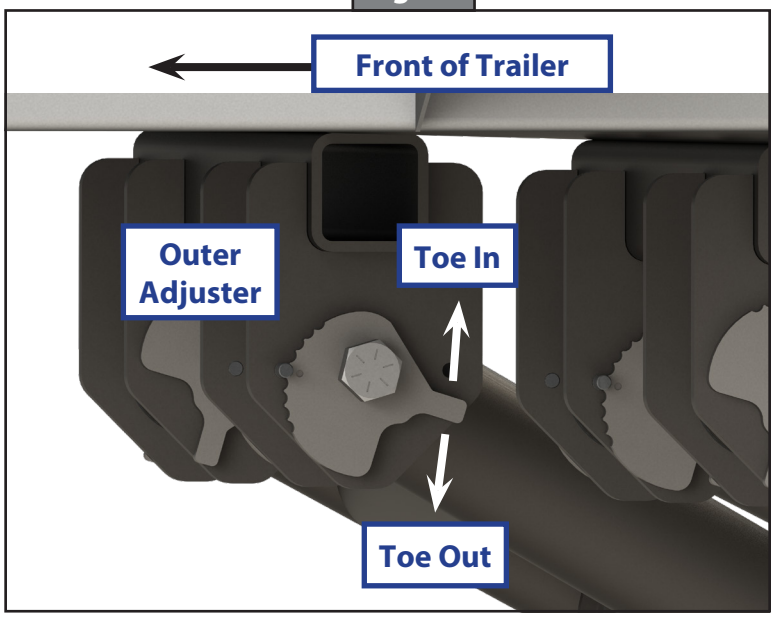
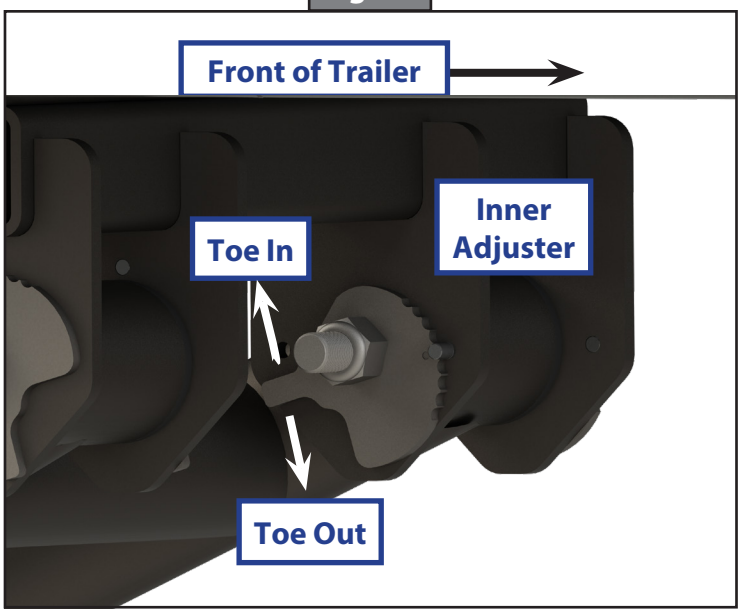


Fig. 11



Roadside View

Fig. 12

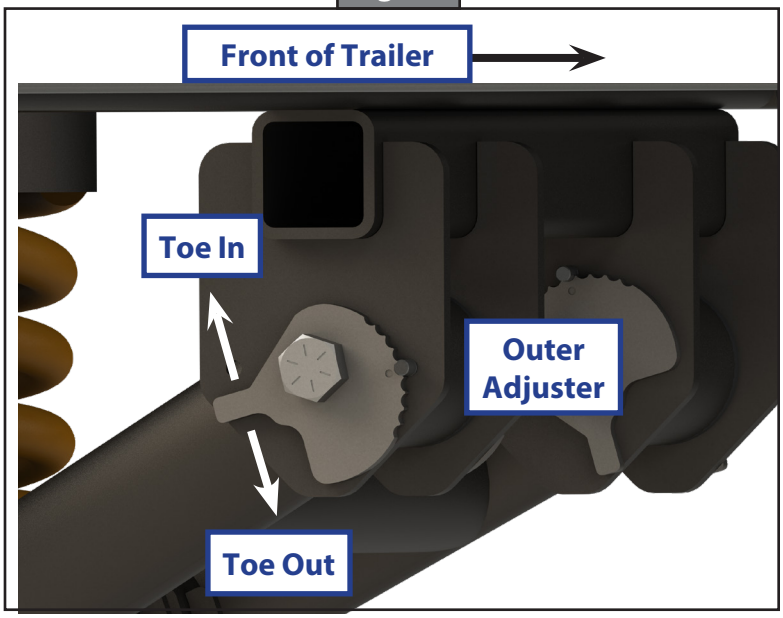
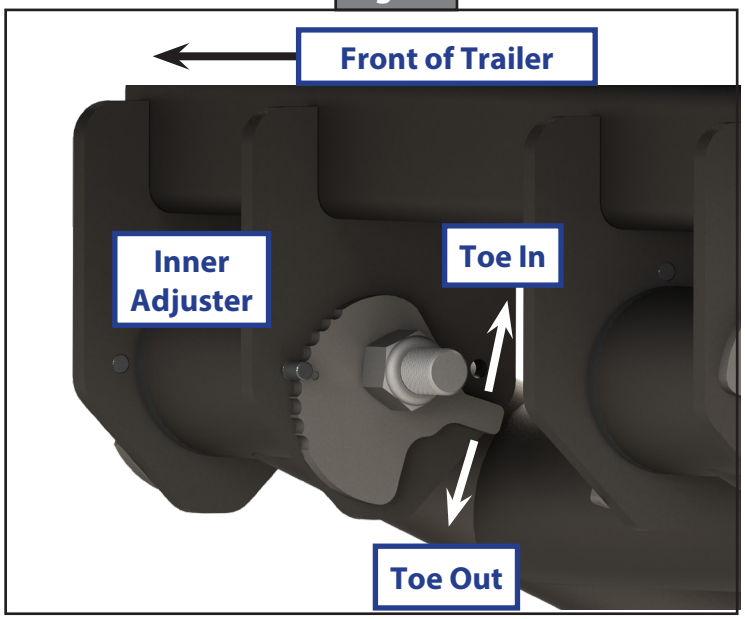


Fig. 13



Shock Absorbers, Springs, Bump Stops Inspection, Replacement

Shock Absorbers

1. Inspect shocks for fluid leakage or shiny spots around the shock body neck. If leakage is found, replace the shocks.

NOTE: It is recommended to replace the set of four shock absorbers at the same time.

2. Torque shock absorber nuts (Fig. 14) to 35 ft-lbs of torque.

Coil Springs

If the suspension feels loose, check for excessive scuffing (large area) around the contact area of the coil springs. If found, replace all four shock absorbers.

Bump Stops

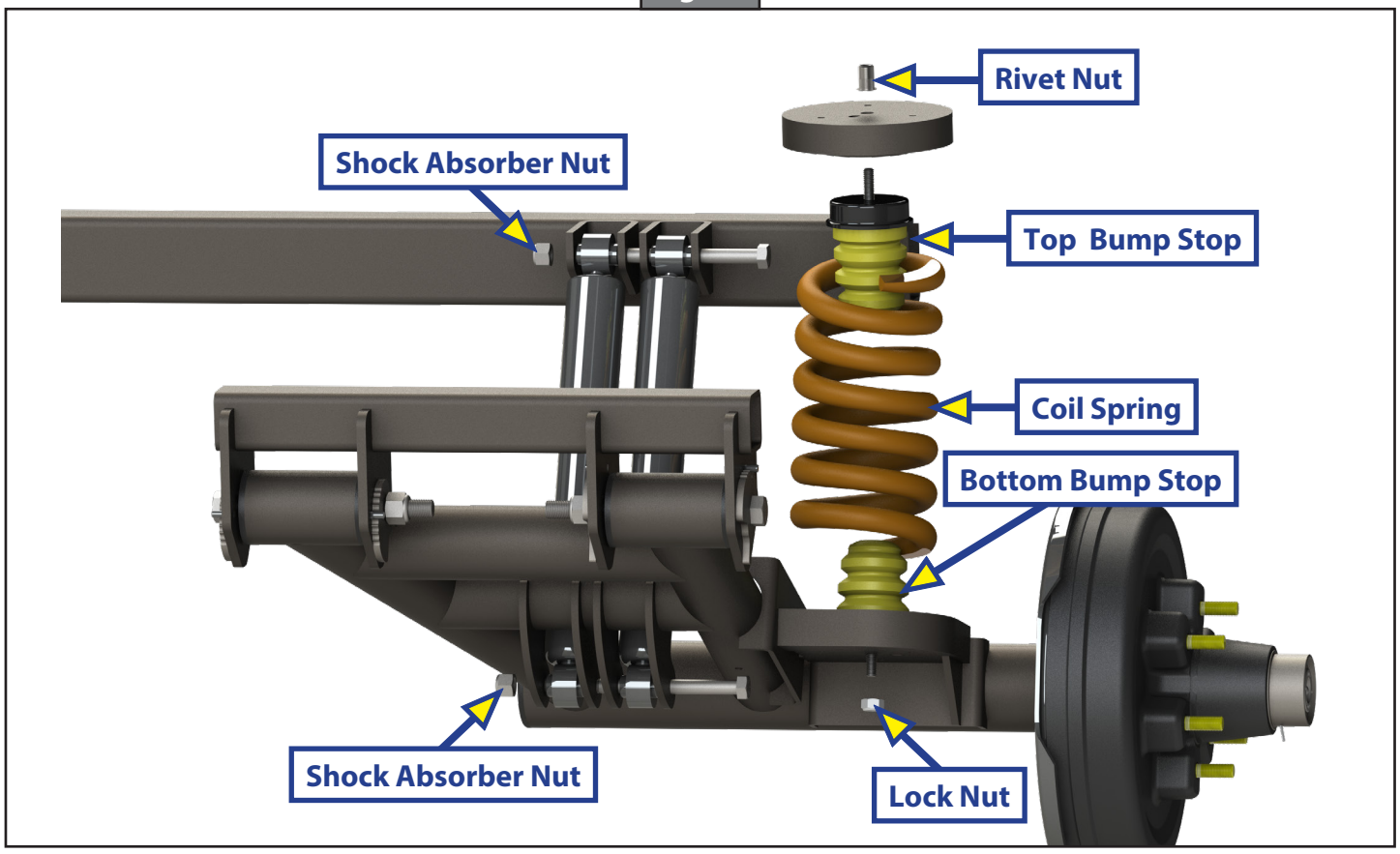
1. Check that bump stops are secured.
   - A. If bump stops are loose or out of place, reinstall using red Loctite to secure.
   - B. Tighten bump stop hardware. The M10 nylon lock nut with the 1.5 mm thread (Fig. 14) securing the bottom bump stop should be torqued to 35 ft-lbs. The M10 x 1.5 mm rivet nut (Fig. 14) fastening the top bump stop can also be tightened.
   - C. If the bump stop stud is bent, replace the bump stop and follow the fastening procedures.

NOTE: If the top bump stop is serviced, the rivet nut attachment may need to be heated in order to remove the bump stop. Red Loctite must then be applied to the stud if the top bump stop is reinstalled or a new bump stop is installed.

Hardware

If any of the components of the independent suspension are replaced, it is recommended that the hardware securing the components, including bolts and nuts, should also be replaced.

Fig. 14



Notes

Please recycle all obsolete materials.

For all concerns or questions, please contact
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Ph: 432-LIPPERT (432-547-7378) | Web: lippert.com | Email: customerservice@lci1.com